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# PATENT SPECIFICATION

678,755



Date of filing Complete Specification : April 23, 1951.

Application Date : May 2, 1950. No. 10798/50.

Complete Specification Published : Sept. 10, 1952.

Index at Acceptance :—Classes 4(i), G2 ; and 44, E4c.

## COMPLETE SPECIFICATION.

### Improvements in Means for Packing Inflatable Dinghies and other Pneumatic Equipment, Parachutes and other Objects.

— I, SIDNEY MITCHELL, a British subject, do hereby declare that the manner in which the invention may be performed is as follows:

**SPECIFICATION NO. 678755**

**INVENTOR:— SIDNEY MITCHELL**

By a direction given under Section 17(1) of the Patents Act 1949 this application proceeded in the name of R.F.D. Company Limited, a British Company, of Catteshall Lane, Godalming, Surrey.

THE PATENT OFFICE

DB 20356/1(18)/5275 150 7/52 R

20 contents to be released. Where, however, it is intended that such contents shall be expelled from the valise automatically by their expansion, there is a risk that the fabric of the expanding article will be torn by the slowly parting teeth of the fastener, or that it will be caused to burst or the valise damaged by local pressure. The object of this invention is to provide an improved form of pack by which these disadvantages may be avoided, and certain advantages, self-evident from the following description, achieved.

30 According to the invention a pack for the purpose referred to takes the form of a container which is closed by sliding clasp fastener whereof the rows of interengaging teeth are modified in such a way that they are capable of parting under an increase of outwardly directed pressure of the contents of the container at one or more points intermediate the length of the fastener. Such increase of pressure may result from the commencing expansion of a pneumatic article, such as an inflatable dinghy, packed in the valise, or from the extrusion between the fastener teeth of a wedge or the like attached to an exteriorly anchored static line drawn taut, or by the application of an exterior force at one of such weakened points.

65 container of canvas or other flexible fabric of which the upper and lower parts 1 and 2 are attached along their adjacent edges by a fastener of the type comprising two rows 3 and 4 of inter-engaging teeth adapted to be fastened and released by a sliding clasp (not shown) in well-known manner.

70 At the point 5 a number of the teeth are removed from the upper row 3: this arrangement sufficiently weakens the fastener to enable it to burst apart under the interior hoop stress developed by even a small increment in the internal pressure of the dinghy as its inflation is initiated, causing the rows 3 and 4 of teeth to be ripped apart throughout the entire length, starting from the point 5, substantially instantaneously, so that the dinghy is completely released from the pack before an undue local pressure can arise to bring about damage either to the dinghy or to the pack itself.

80 If desired the fastener may be weakened by the omission of teeth from one row at a number of spaced points 5. The dinghy may be packed in its valise in such a fashion that when its inflation means is operated, the initial increase of its interior pressure will be concentrated at the point or points 5.

90 In the case of the parachute container

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### COMPLETE SPECIFICATION.

#### Improvements in Means for Packing Inflatable Dinghies and other Pneumatic Equipment, Parachutes and other Objects.

We, R. F. D. COMPANY LIMITED, a British Company, and SIDNEY MITCHELL, a British Subject, both of Cattleshall Lane, Godalming, Surrey, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

The valises heretofore employed as containers for packed equipment such as inflatable dinghies, parachutes and other life-saving equipment have been provided with sliding clasp fasteners of the conventional type, in which the clasp must be slid from end to end of the fastener to permit the contents to be released. Where, however, it is intended that such contents shall be expelled from the valise automatically by their expansion, there is a risk that the fabric of the expanding article will be torn by the slowly parting teeth of the fastener, or that it will be caused to burst or the valise damaged by local pressure. The object of this invention is to provide an improved form of pack by which these disadvantages may be avoided, and certain advantages, self-evident from the following description, achieved.

According to the invention a pack for the purpose referred to takes the form of a container which is closed by sliding clasp fastener whereof the rows of interengaging teeth are modified in such a way that they are capable of parting under an increase of outwardly directed pressure of the contents of the container at one or more points intermediate the length of the fastener. Such increase of pressure may result from the commencing expansion of a pneumatic article, such as an inflatable dinghy, packed in the valise, or from the extrusion between the fastener teeth of a wedge or the like attached to an exteriorly anchored static line drawn taut, or by the application of an exterior force at one of such weakened points.

The manner in which the invention may be carried into effect is hereinafter described with reference to the accompanying drawings, in which Fig. 1 is a perspective view of the pack of a collapsed pneumatic dinghy, having a sliding clasp fastener modified in accordance with the invention, and Fig. 2 is a large-scale detail showing the affected part of the fastener. Fig. 3 is a perspective view of the pack of a parachute embodying the invention, and Fig. 4 a large-scale fragmentary view showing the manner of attachment of the static line used to open the pack.

Referring to Figs. 1 and 2 it will be seen that the pack there shown takes the conventional form of a substantially cylindrical container of canvas or other flexible fabric of which the upper and lower parts 1 and 2 are attached along their adjacent edges by a fastener of the type comprising two rows 3 and 4 of inter-engaging teeth adapted to be fastened and released by a sliding clasp (not shown) in well-known manner.

At the point 5 a number of the teeth are removed from the upper row 3 ; this arrangement sufficiently weakens the fastener to enable it to burst apart under the interior hoop stress developed by even a small increment in the internal pressure of the dinghy as its inflation is initiated, causing the rows 3 and 4 of teeth to be ripped apart throughout the entire length, starting from the point 5, substantially instantaneously, so that the dinghy is completely released from the pack before an undue local pressure can arise to bring about damage either to the dinghy or to the pack itself.

If desired the fastener may be weakened by the omission of teeth from one row at a number of spaced points 5. The dinghy may be packed in its valise in such a fashion that when its inflation means is operated, the initial increase of its interior pressure will be concentrated at the point or points 5.

In the case of the parachute container

shown in Figs. 3 and 4, in which the cover 6 is attached along its edge to the upper edge of the wall 7 of the lower portion of the container, a number of teeth are again removed at a point 8 from the upper row 9, leaving a short gap between the latter from the lower row of teeth 10. The two halves of the fastener are conveniently reinforced in this instance in the region of the point 8 by means of externally attached strips 11, 12, as shown.

The static line (not shown) used to drag the parachute from the pack is attached to the end of the strap 13 by means of the shackle 14. Within the container a wedge 15 is affixed to the strap 13, which latter passes through the gap between the rows of teeth 9, 10 at the point 8, in such position that when the line is drawn taut the leading edge 151 of said wedge 15 will enter the said gap and apply a bursting pressure between the edges of the fastener, causing the same to rip apart in opposite directions from the point 8.

16, 16, 16 are stitches of thread intended to hold the parts in position except when the strap 13 is deliberately pulled, when a sharp tug will suffice to break the threads 16.

The application of the invention is useful in connection with the containers used for dropping heavy articles by parachute from aircraft. The impact of such containers on striking the ground is so considerable that it has been customary to protect their contents from damage by mounting the same upon a frame structure carrying a series of inflated bags in the wall of which is provided a thin sheet of rubber or the like which will burst on impact, whereby the arrangement tends to disperse the force of impact. It is now proposed to incorporate in the said burstable bags sliding clasp fasteners modified in the manner hereinbefore described, in accordance with this invention, together with an interior flap valve which will serve to prevent the escape of air through the gap between the rows of teeth. The increased interior tension developed in the material composing the bags when the latter strike the ground will be effective to rip open the fastener in the manner already described. Such an arrangement will be advantageous since the containers so

adapted can immediately be rendered ready for re-use by re-closing the fastener, no other replacement being necessary.

What we claim is:—

1. A pack for the purpose referred to, comprising a container closed by a sliding clasp fastener whereof the rows of inter-engaging teeth are modified in such a way that they are capable of parting at one or more points intermediate the length of the fastener under an increase of outwardly directed pressure of the contents of the container.

2. A pack as claimed in Claim 1, wherein the modification of the rows of inter-engaging teeth consists in omitting or removing from one of the rows a number of teeth at one or more points in the length of the fastener, resulting in weakening the fastener at each such point so that parting of the rows of teeth under an increased internal pressure will be initiated there.

3. A pack as claimed in the preceding claims, in combination with a contained dinghy packed in such fashion that when inflated the initial increase of the internal pressure thereon will be concentrated at the point or points at which the fastener has been weakened.

4. A pack as claimed in Claim 2, in combination with a contained parachute having static line extraction means, wherein the line is attached to a strap or the like passed through a gap in the fastener at a weakened point thereof and comprising a wedge affixed to said strap within the pack in such fashion that when the static line is tautened it will pull the wedge into said gap to apply the necessary bursting pressure thereto to initiate severance of the rows of fastener teeth.

5. The improved dinghy pack, constructed and arranged substantially as herein described with reference to Figs. 1 and 2 of the accompanying drawings.

6. The improved parachute pack, constructed and arranged substantially as herein described with reference to Figs. 3 and 4 of the accompanying drawings.

BREWER & SON,  
Chartered Patent Agents,  
5—9, Quality Court, London, W.C.2.

#### PROVISIONAL SPECIFICATION.

#### Improvements in Means for Packing Inflatable Dinghies and other Pneumatic Equipment, Parachutes and other Objects.

We, R. F. D. COMPANY LIMITED, a British Company, and SIDNEY MITCHELL, a British Subject, both of Catteshall Lane, Godalming, Surrey, do hereby declare this invention to

be described in the following statement:—

The valises heretofore employed as containers for packed equipment such as inflatable dinghies, parachutes and other life-

5 saving equipment have been provided with sliding clasp fasteners of the conventional type, in which the clasp must be slid-  
 10 den from end to end of the fastener to permit the contents to be released. Where, however, it is intended that such contents shall be expelled from the valise automatically by their expansion, there is a risk that the fabric of the expanding article will be torn by the  
 15 slowly parting teeth of the fastener, or that it will be caused to burst or the valise damaged by local pressure. The object of this invention is to provide an improved form of pack by which these disadvantages may be avoided, and certain advantages, self-evident from the following description, achieved.

20 According to the invention a pack for the purpose referred to takes the form of a container which is fastened by a sliding clasp fastener whereof the rows of inter-engaging teeth are modified in such a way that they  
 25 are capable of parting under an increase of outwardly directed pressure of the contents of the container at one or more points intermediate the length of the fastener. Such increase of pressure may result from the commencing expansion of a pneumatic article, such as an inflatable dinghy, packed  
 30 in the valise, or from the extrusion between the fastener teeth of a wedge or the like attached to an exteriorly anchored static line drawn taut, or by the application of an exterior force at one of such weakened points.

35 In one embodiment of the invention, applied to the pack of a collapsed pneumatic dinghy having means for its inflation in an

emergency, the container may be a canvas or other flexible fabric valise having its edges secured together by a sliding clasp fastener. At one or more points in the length of the fastener a small number of the teeth of one side of the fastener is removed: this arrangement sufficiently weakens the fastener to enable it to burst apart under the interior  
 40 hoop stress developed by even a small increment in the interior pressure of the dinghy as its inflation is initiated, so that the entire fastener is ripped open throughout its length substantially instantaneously and the dinghy completely released before risk of its damage by an undue local pressure can arise.

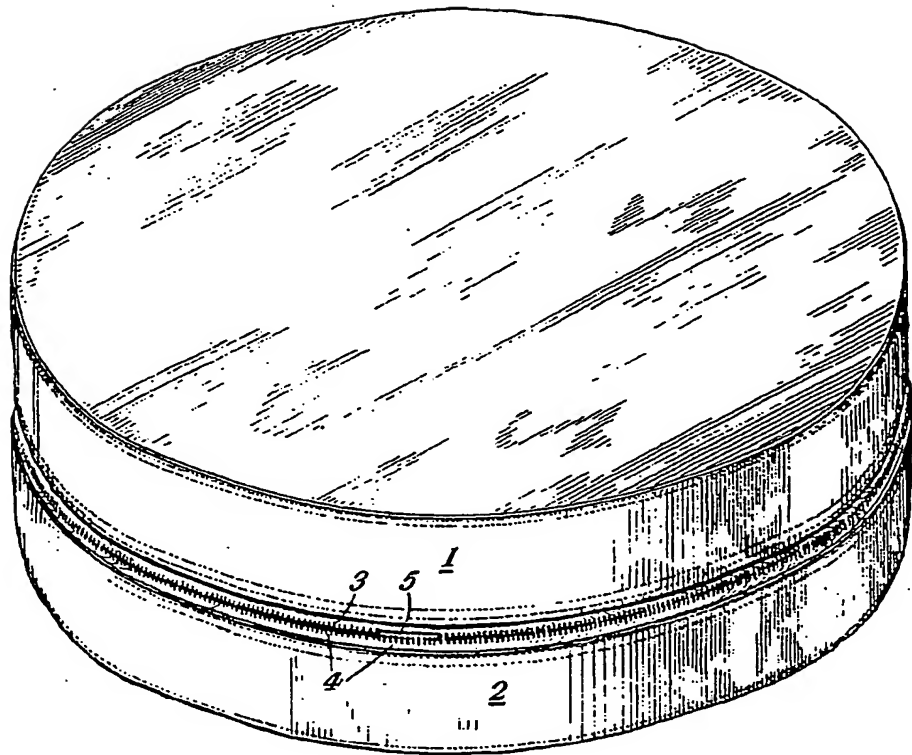
The dinghy may be packed in its valise in such a fashion that when its inflation means is operated, the initial increase of its interior pressure will be concentrated at the point or points at which the fastener has been weakened.

Where the improved form of pack is intended for use as a parachute container, the parachute may be provided with a conical wedge of which the apex is attached to a static line passed between the edges of the fastener at a point where it is weakened by the removal of a small number of teeth, so  
 60 that the line being drawn taut in an emergency the cone will apply a busting pressure between the edges of the fastener and cause the same to rip open in the manner already described.

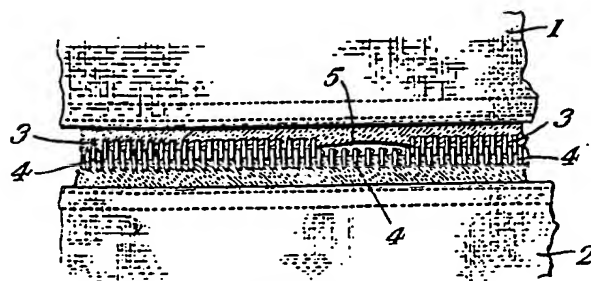
BREWER & SON,

Chartered Patent Agents,

3-9, Quality Court, Chancery Lane,  
 London, W.C.2.



*Fig. 1.*



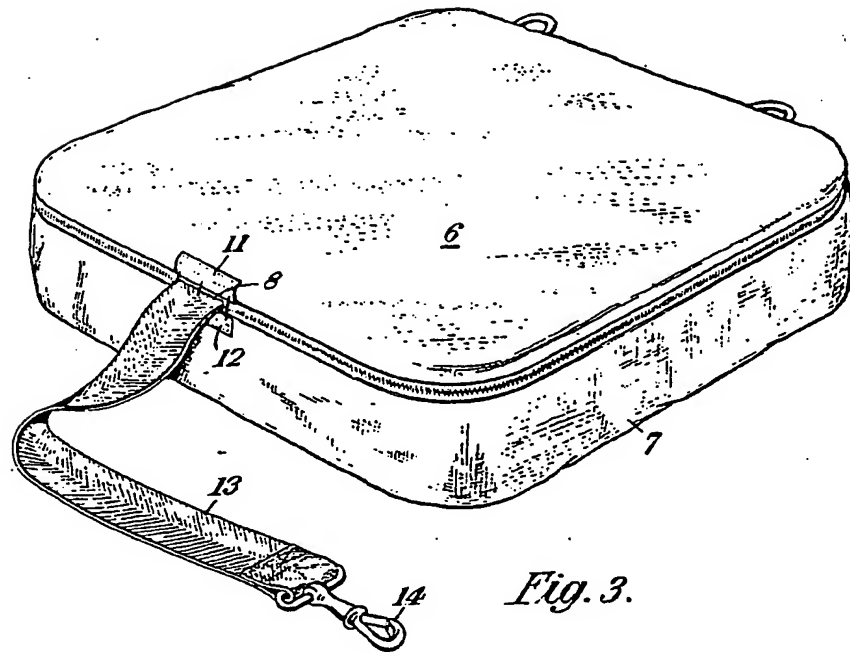
*Fig. 2.*

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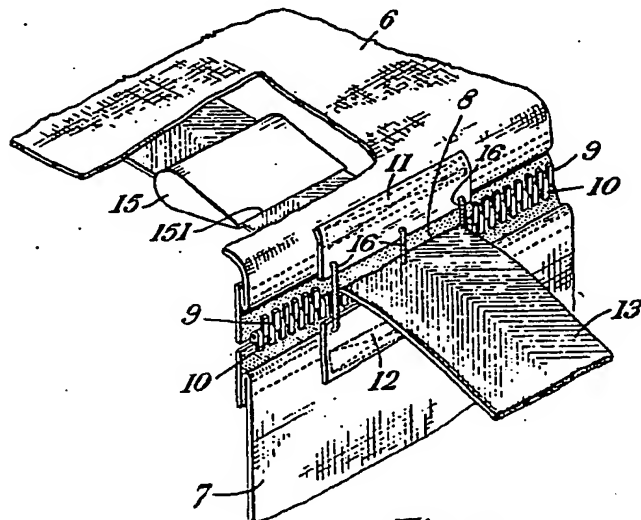
2 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale.

SHEETS 1 & 2



*Fig. 3.*



*Fig. 4.*

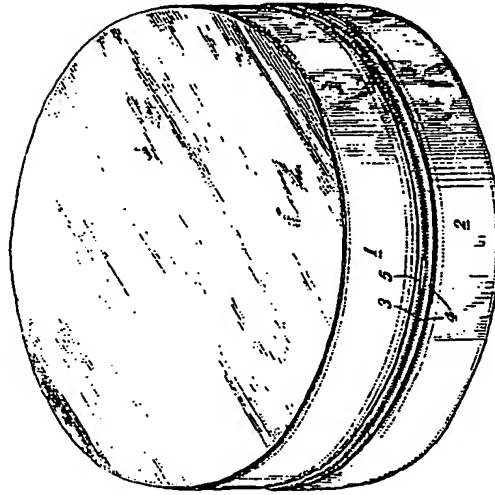


Fig. 1.

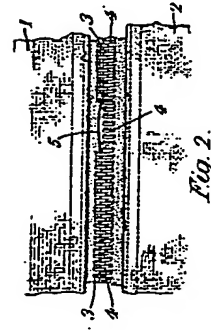


Fig. 2.

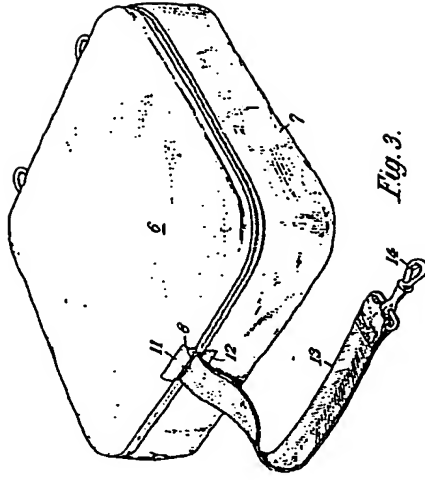


Fig. 3.

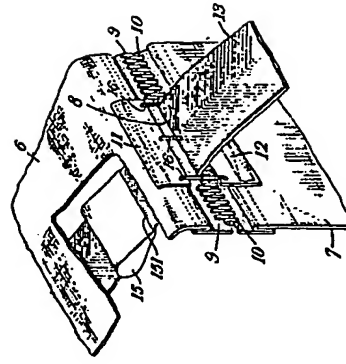


Fig. 4.

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